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Unconventional Weapons Can Help U.S. Troops Fight Insurgents in Iraq

by Roxana Tiron

Despite spending more than a decade developing non-lethal weapon technology, the Defense Department is struggling to catch up with soldiers' needs in Iraq.

While researchers in the United States ponder how to advance from rubber bullets and tear gas to such cutting-edge technologies as directed energy, troops on the ground are demanding quick non-lethal alternatives for peacekeeping and crowd-control operations.

Soldiers are asking for devices that will help them separate gunmen from human shields in crowds; that sweep areas through which convoys are moving; that suppress fire from rocket-propelled grenade launchers, without killing nearby civilians, and that safely stop suicide vehicle bombers at checkpoints.

The most widely used non-lethal weapons are chemical agents, such as tear gas and pepper spray; blunt impact munitions, including rubber bullets and bean bag rounds; diversionary devices, among which are flash/bang grenades and electric shock, and anti-vehicle systems, embracing caltrops and spike strips to deflate tires.

These tools have been deployed as part of non-lethal capability sets designed by the joint non-lethal weapons directorate in the late 1990s. The directorate was created in 1997 to support the Marine Corps' role as the agency responsible for non-lethal weapons.

When it created the non-lethal capability set concept, the directorate designed it to equip 200 people, or what was referred to as the "battalion-size" NLCS. The set includes everything from blunt-trauma weapons, dye markers, riot shields and masks to anti-vehicle capabilities, electro-muscular disruptive tools, flash-bang grenades and illumination devices.

The sets were first deployed to Kosovo, then Afghanistan and Iraq. But soldiers in Iraq have complained that their equipment sets were too bulky and difficult to transport and distribute.

Their gripes did not fall on deaf ears. The sets recently have been reconfigured to platoon size to equip 30 soldiers, Mireille Pincay-Rodrigues, the project officer for non-lethal weapons within the Army's close combat systems program at Picatinny, N.J., told National Defense.

Her office is responsible for fielding the Army's non-lethal capabilities sets. "This reconfiguration resulted from feedback from the field regarding the bulkiness of the battalion-size set—13 boxes—and the time it took to unpack, assemble and distribute the riot control equipment," she said.

The platoon-size set will be delivered in one large shipping container, referred to as quad con, with already assembled shields that are easily removable, said Pincay-Rodrigues. "There are inserts which contain the remaining equipment needed. Additionally, this quad con also will store the equipment when

not in use," she said. Meanwhile, the non-lethal ammunition will be stored separately at a supply point.

The smaller set will contain the same riot control gear as the former battalion version, but in smaller quantities, Pincay-Rodrigues said. There are, however, new items that have been included. These are the individual riot control agent disperser (M39) and trainer (M40), the vehicle lightweight arresting device, an expandable baton, a family of restraints—strap cinch, full body restraint and disposable tri-fold—and the advanced XM26E Taser.

The Army has been sending some of these new non-lethal technologies to the Middle East, through its rapid equipping force and the joint directorate. These capabilities are shared with the Marine Corps.

The M26 advanced Taser, for example, was the first urgent fielding of an electro-muscular disruption capability to Iraq, said Liliana McShea, a systems engineer at the Army's Armaments Research Development and Engineering Center, which is in charge of coordinating the services' non-lethal technology integration and development.

The M26 Taser recently has been upgraded to the XM26E Taser and X-Rail, which is 60 percent smaller and lighter than the M26, according to McShea. It is an integrated weapons system capability with an under-barrel attachment for the M4 carbine equipped with the Picatinny rail, she added. That capability has also been fielded to troops in Iraq.

Another technology in high demand is the FN 303 less-than-lethal launcher system. The REF deployed a limited quantity of this high-rate of fire, multi-shot, blunt impact marking capability.

The vehicle lightweight arresting device, a man-portable, pre-emplaced, expandable spiked net, also is a hot commodity for soldiers in Iraq. VLAD is positioned flat on asphalt or gravel roads, and it is designed to puncture tires and seize a vehicle's axle with tungsten spikes and nylon netting.

The single-use device, developed by the U.K. company QinetiQ, is capable of disabling vehicles without using deadly force. When a vehicle runs over the spikes, they puncture and grab the tires, and the net wraps around the axle, stopping the vehicle.

Soldiers have a stringent need for counter-personnel systems, encompassing area denial to personnel, crowd control, incapacitation of individuals and clearing of facilities and personnel structures, according to McShea. Another critical area is the development of counter-materiel systems to deny enemy access to vehicles or vessels, said McShea.

The reason for these gaps is that JNLWD has been severely under-funded and under-staffed to address much development beyond elements of force protection, according to a February report sponsored by the Council on Foreign Relations.

Virtually all the research and development in the non-lethal arena is funded through the directorate, said the report. Even though the budget increased to $45.4 million this year from $22 million in the previous seven years, it is not enough for the directorate to play as large a role as it would like. Ideally, it would need a budget in the neighborhood of $300 million, according to the report.

Because of its high visibility and small budget, the directorate has been forced to focus on relatively mature technologies while investing little in developing new capabilities. Since the directorate's budget only covers advanced development, the services are left to fund science and technology efforts.

But despite snags in the process, the directorate and the services have set in motion a series of cutting-edge technology developments to satisfy some of the critical areas in the next four to 10 years.

Among those technologies are the mobility denial system, which would stop vehicles by spreading a slick substance across the road, and the portable vehicle arresting barrier, which would be able to stop a 7,500 pound vehicle traveling 45 miles an hour within 200 feet, said McShea.

When the barrier is set up it resembles a standard speed bump, she said. It is designed to provide checkpoint security without endangering or disrupting normal traffic. Two soldiers can install a whole system in about three hours or in less than 30 minutes with expedient anchoring. The complete system weighs 1,100 pounds once it is packaged, McShea said.

The directorate, meanwhile, is undertaking initiatives that include high-powered microwaves for countering electronics and laser weapons. HPMs generate an intense blast of electro-magnetic waves in a microwave frequency band that is strong enough to overload electrical circuits.

One of these HPM efforts is the active denial system that uses the millimeter wave energy to create an intolerable skin-heating sensation, repelling human targets without hurting them, according to the CFR report. The ADS is an approved advanced concept technology demonstration program that will develop, evaluate and demonstrate non-lethal prototype capabilities.

ARDEC, for its part, is addressing a joint service requirement for the creation of a personnel area denial system, said McShea. This system would be designed to select a pre-emplaced non-lethal, or lethal weapon, as required by the situation. The manned control station would be able to activate the already placed munitions, she said.

Army researchers also are developing a new generation of non-lethal munitions. One of those is the XM 1057 rapid-fire, short-range, crowd-dispersal round.

Meanwhile, an airburst non-lethal munition is in the works for the XM 25/XM29 integrated air burst weapon, formerly known as the objective individual combat weapon. The round is meant to offer a long-range counter personnel capability for the individual soldier, according to McShea. It is to have a range of more than 250 meters. Down the line, ARDEC is looking to extend the range to 500 meters, she said.

If one requirement from the field rings loud and clear, it is the ability of soldiers to shoot at ranges of 100 meters or more. The non-lethal weapons currently deployed are short range, reaching about 21 meters. The soldiers' request is to have the increased range adapted to existing weapons, said Pincay-Rodrigues.

With the existence of a long-range airburst round, the Army is looking to fulfill another goal—the integration of lethal and non-lethal capabilities in the same weapon system. This capability will be available in 2008 at the earliest, according to Pincay-Rodrigues.

To satisfy the need to cover extended ranges, ARDEC also is working on a non-lethal mortar munition that could cover a distance of two kilometers or more, said McShea.

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